

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A computer implemented method of determining media display effectiveness, the method comprising:

aggregating geo data received from a plurality of data sources, at least a portion of said geo data derived from a satellite positioning system ("SPS"), said geo data representing the movement of respondents along paths of travel;

matching the locations of media displays to positions on said paths of travel represented by said geo data; and

rating the effectiveness of said media displays utilizing said matches between said media display locations and said positions on said paths of travel represented by said geo data.

2. The method of Claim 1, further comprising:

analyzing said geo data to determine if said geo data is erroneous; and

removing any erroneous data from said geo data prior to matching the locations of media displays to positions on said paths of travel represented by said geo data.

3. The method of Claim 1, wherein rating the effectiveness of said media displays comprises determining the reach and frequency of said media displays.

4. The method of Claim 1, further comprising augmenting said geo data with external data to enhance accuracy.

5. The method of Claim 4 wherein said external data is geographic information system ("GIS") data.

6. The method of Claim 1 further comprising grooming said geo data to enhance accuracy.

7. The method of Claim 1 wherein said geo data is grouped in accordance with the demographics of said respondents.

8. The method of Claim 1 wherein said plurality of data sources are monitoring devices.

9. The method of Claim 8 further comprising initializing said monitoring devices with study specific data.

10. The method of Claim 9, wherein said study specific data includes RF zones.

11. The method of Claim 8, wherein said monitoring device locations include locations located along calculated lines extending between geo data locations.

12. A computer-readable medium, containing computer-executable instructions for performing the method of any of Claims 1-11.

13. A computing system, including a processor and a memory, operative to perform the method of any of Claims 1-11.

14. A computer implemented method of determining media display effectiveness, the method comprising:

obtaining geo data specifying a plurality of locations traversed by a monitoring device and an associated respondent, at least a portion of said geo data derived from a satellite positioning system ("SPS");

comparing said monitoring device locations with a plurality of media display locations; and

determining if said monitoring device was exposed to a media display based on whether said monitoring device locations and said media display locations are sufficiently close enough to conclude that the locations match.

15. The method of Claim 14, wherein said geo data is obtained from said monitoring device.

16. The method of Claim 14, wherein said geo data obtained from said monitoring device is downloaded to a download server.

17. The method of Claim 14, further comprising obtaining device data.

18. The method of Claim 17, wherein said device data is obtained from said monitoring device.

19. The method of Claim 17, wherein device data obtained from said monitoring device is downloaded to a download server.

20. The method of Claim 14, wherein sufficiently close is based on determining if said monitoring device traversed within a threshold distance of a media display location.

21. The method of Claim 14, wherein said monitoring device locations include locations located along calculated lines extending between geo data locations.

22. The method of Claim 21, wherein calculated lines are straight lines.

23. The method of Claim 21, wherein said calculated lines are curved lines.

24. The method of Claim 14, wherein said geo data includes velocity data describing the rate of movement of said monitoring device.

25. The method of Claim 14, further comprising grooming said geo data.

26. The method of Claim 25, wherein grooming said geo data comprises adding DGPS data to said geo data.

27. The method of Claim 25, wherein grooming said geo data comprises merging partial geo data locations with data representing known locations.

28. The method of Claim 25, wherein grooming said geo data comprises determining additional geo data locations from data representing known locations.

29. The method of Claim 14, further comprising identifying and storing anomalous geo data.

30. The method of Claim 14, further comprising determining confidence ratings for said monitoring device locations.

31. The method of Claim 14, further comprising enhancing the accuracy of said geo data using Geographic Information System ("GIS") data to enhance said geo data.

32. The method of Claim 14, further comprising analyzing said geo data to identify erroneous ("out-of-tab") data.

33. The method of Claim 32, further comprising storing any identified out-of-tab geo data in an out-of-tab data location in memory.

34. The method of Claim 32, wherein any identified out-of-tab geo data is removed from said geo data.

35. The method of Claim 14, further comprising determining an exposure value for each of said media displays that are sufficiently close enough to conclude that the locations match.

36. The method of Claim 35, further comprising determining a reach value for each of said media displays that are sufficiently close enough to conclude that the locations match.

37. The method of Claim 35, further comprising determining a frequency value for each of said media displays that are sufficiently close enough to conclude that the locations match.

38. The method of Claim 35, further comprising entering demographic data into said monitoring device:

determining reach and frequency values for each of said media displays; and
categorizing said reach and frequency values in accordance with the demographics entered into said monitoring device.

39. The method of Claim 35, further comprising determining monitoring device reach and frequency values for each of said media displays; and

calculating Gross Rating Points ("GRPs") for each of said media displays based on said geo data.

40. The method of Claim 35, further comprising determining daily effective circulation ratings from said geo data.

41. The method of Claim 14, wherein said monitoring device is carried by a respondent and further comprising processing a survey of said respondent's recall of media displays, said survey corresponding to said geo data.

42. The method of Claim 14, wherein said monitoring device is carried by a respondent and further comprising processing a survey of said respondent's purchase behavior, said survey corresponding to said geo data.

43. The method of Claim 14 wherein said monitoring device is carried by a respondent and further comprising:

processing a survey of said respondent's recall of media displays, said survey corresponding to said geo data;

processing a survey of said respondent's purchase behavior, said survey corresponding to said geo data; and

tabulating said survey results to form recall and purchase ratings for each of said media displays.

44. A computer-readable medium, containing computer-executable instructions for performing the method of any of Claims 14-43.

45. A computing apparatus, having a processor and a memory, and operative to perform the method of any of Claims 14-43.

46. A computer implemented method of determining optimized placement of media displays, the method comprising:

obtaining geo data specifying a plurality of locations traversed by a monitoring device in a geographic region, at least a portion of said geo data derived from a satellite positioning system ("SPS");

selecting a target level of media display exposure and a budget;

determining potential locations within said geographic region with a price within said budget;

matching said potential locations to geo data locations;
determining for said potential location whether said monitoring device would have been exposed to a potential media display at each of said potential locations; and
determining an optimized placement of a media display based on a level of exposure that said media display would have had at a potential location.

47. The method of Claim 46, further comprising determining a reach value for each of said potential locations.

48. The method of Claim 46, further comprising determining a frequency value for each of said potential locations.

49. The method of Claim 46, further comprising:
determining reach and frequency values for each of said potential locations; and
calculating Gross Rating Points ("GRPs") for each of said potential locations based on said geo data.

50. The method of Claim 46, further comprising determining daily effective circulation ratings from said geo data.

51. A computer-readable medium, containing computer-executable instructions for performing the method of any of Claims 46-50.

52. A computing apparatus, having a processor and a memory, and operative to perform the method of any of Claims 46-50.

53. A computer implemented method of location usage planning, comprising;
obtaining geo data specifying a plurality of locations traversed by a plurality of monitoring devices within a geographic region, at least a portion of said geo data derived from a satellite positioning system ("SPS");
selecting desired traffic characteristics and demographics for a desired location;
establishing traffic characteristics and demographics for all geo data locations;
comparing said established traffic characteristics and demographics to said desired traffic characteristics; and

determining at least one geo data location having traffic characteristics that optimally match said desired characteristics.

54. The method of Claim 53 wherein said geo data includes line segments between geo data locations.

55. A computer-readable medium, containing computer-executable instructions for performing the method of any of Claims 53-54.

56. A computing apparatus, having a processor and a memory, and operative to perform the method of any of Claims 53-54.

57. A monitoring device for tracking a respondent's location comprising:
(a) a satellite positioning system ("SPS") component for periodically determining the position of the monitoring device;
(b) a motion sensing component for indicating a time the monitoring device was last moved; and
(c) a processing system coupled to said motion sensing component for controlling the power consumed by the monitoring device based on whether said time since the monitoring device last moved is within a threshold time.

58. The device of Claim 57, wherein said motion sensing component is a trembler.